MHz Range Crystal unit TSX-3225

SEIKO EPSON CORPORATION

Product name TSX-3225 24.000000 MHz 9.0 +10.0-10.0

Product Number / Ordering code X1E0000210048xx

Please refer to the 5.Packing information about xx (last 2 digits)

Pb free / Complies with EU RoHS directive

Reference weight Typ. 17 mg

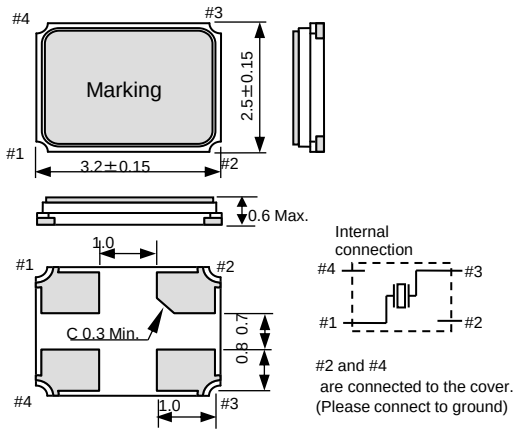
## 1.Absolute maximum ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|---|---|---|---|---|---|---|
| Storage temperature | T_stg | -40 | − | +125 | ºC | Storage as single product |
| Operating temperature | T_use | -40 | − | +105 | ºC | |

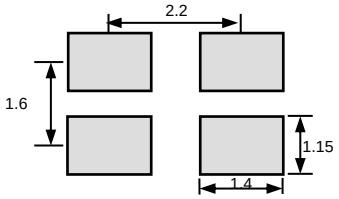
## 2.Specifications(characteristics)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|---|---|---|---|---|---|---|
| Nominal frequency | f_nom | — | 24.000000 | — | MHz | Fundamental |
| Frequency tolerance | f_tol | -10 | − | +10 | x $10^{-6}$ | @+25ºC |
| Frequency Stability over temperature | f_tem | -20 | − | +20 | x $10^{-6}$ | -40ºC to +105ºC |
| Operating temperature | T_use | -40 | − | +105 | ºC | |
| Level of drive | DL | 10 | 100 | 200 | µW | |
| Load capacitance | CL | — | 9 | — | pF | |
| Motional resistance (ESR) | R1 | − | - | 40 | Ω | |
| Motional capacitance | C1 | - | 3.48 | - | fF | |
| Motional inductance | L1 | - | 12.64 | - | mH | |
| Shunt capacitance | C0 | - | 1.27 | - | pF | |
| Frequency aging | f_age | -1 | — | +1 | x$10^{-6}$ /yea | @+25ºC, First year |

## 3.External dimensions (Unit: mm)




## 4.Footprint(Recommended) (Unit: mm)




## 5.Packing information

[ 1 ]Product number last 2 digits code (xx) description The recommended code is "17"

X1E0000210048xx

| Code | Condition | Code | Condition |
|---|---|---|---|
| 01 | Any Q'ty vinyl bag(Tape cut) | 00 | 2000pcs / Reel |
| 11 | Any Q'ty / Reel | 16 | 3000pcs / Reel |
| 12 | 250pcs / Reel | 17 | 4000pcs / Reel |
| 14 | 1000pcs / Reel | | |



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[ 2 ] Taping specification

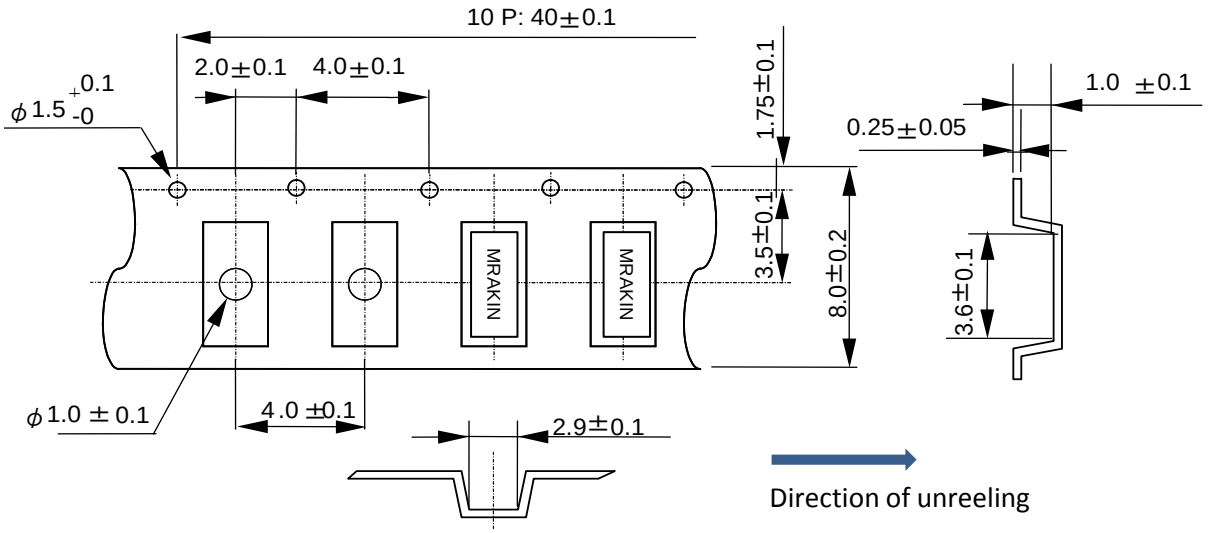
Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE0804L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm

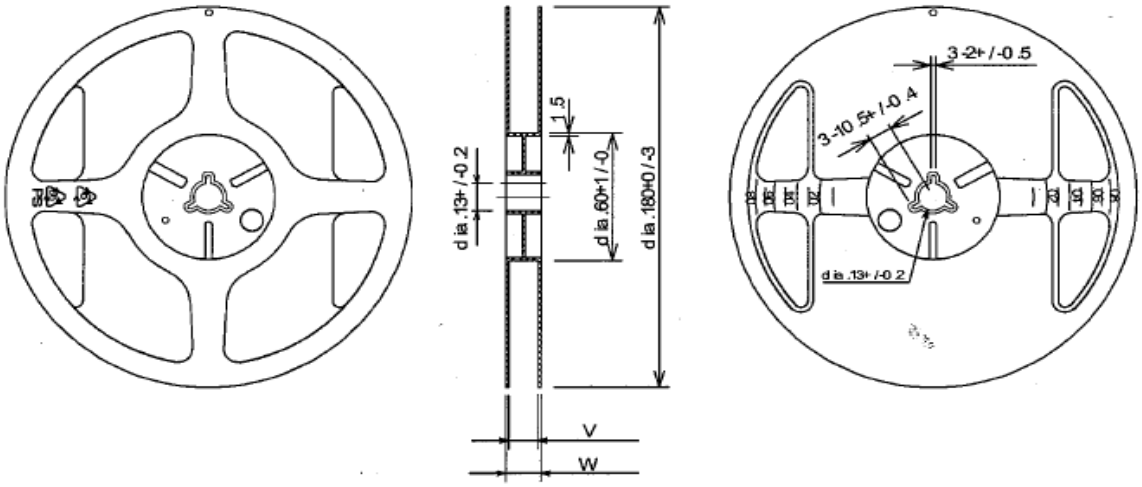



(2) Reel dimensions

Center material : PS

Material of the Reel : PS

Unit: mm



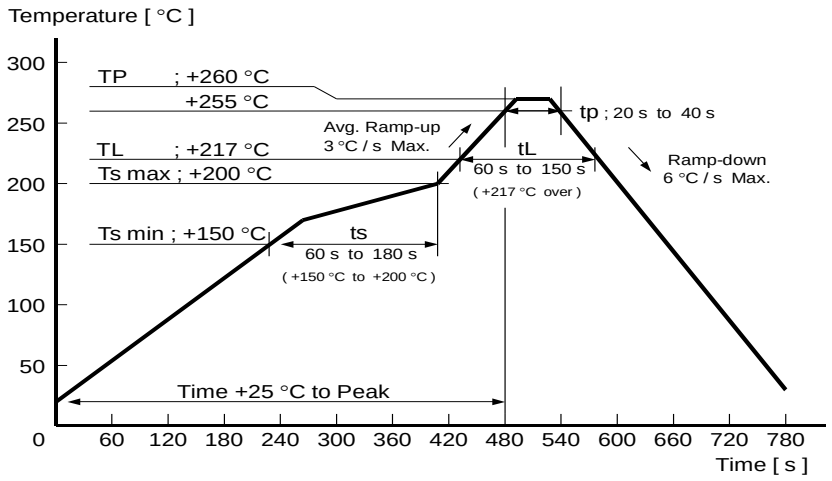

| V(mm) | W(mm) |
|---|---|
| 9.0+/-0.3 | 11.4+/-1 |



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## 6.Reflow profile

Reflow condition (Follow of JEDEC STD-020D.01)




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